



Application No. 10/709, 225

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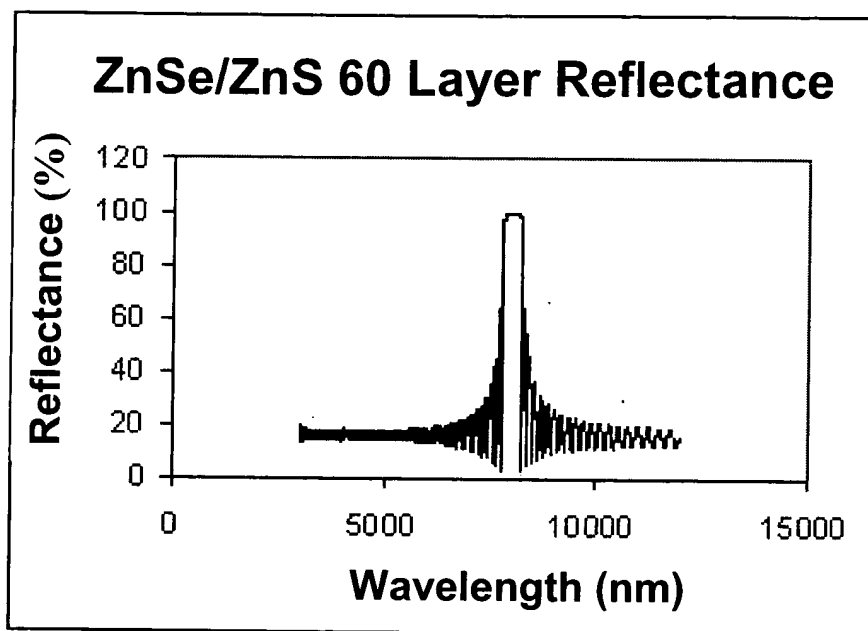
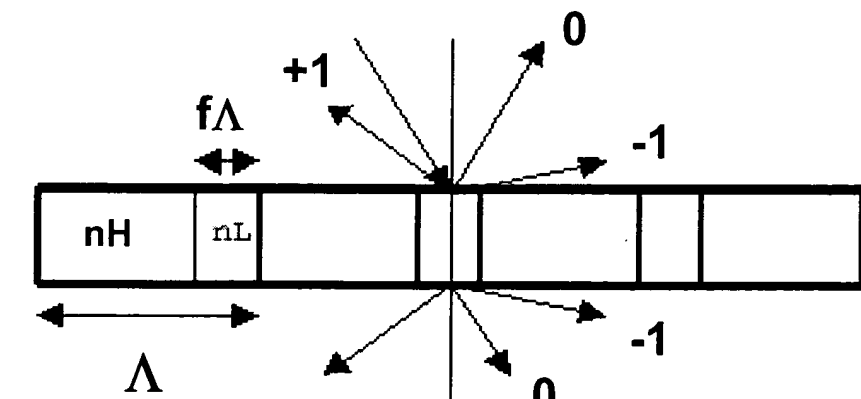
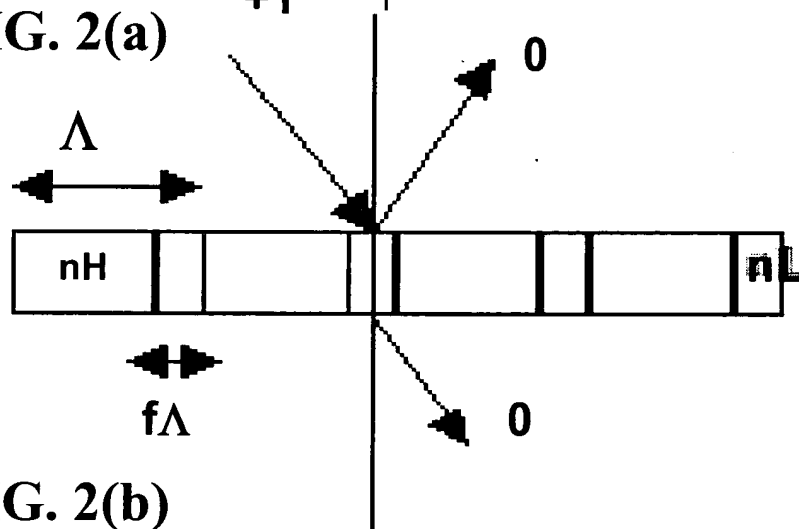


FIG. 1.

8/17/2006

**FIG. 2(a)****FIG. 2(b)**

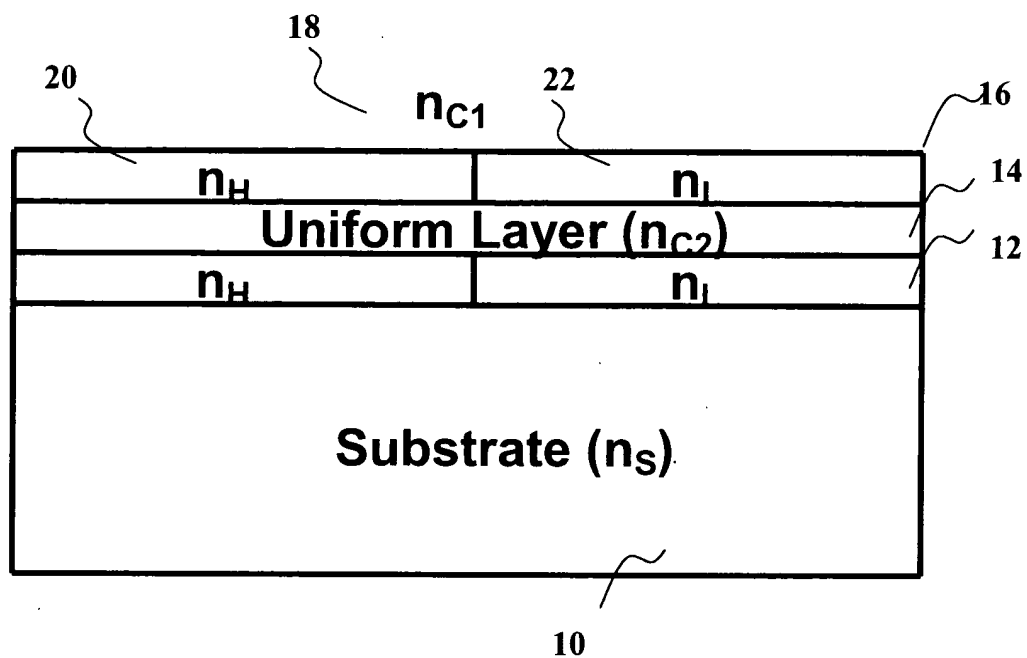
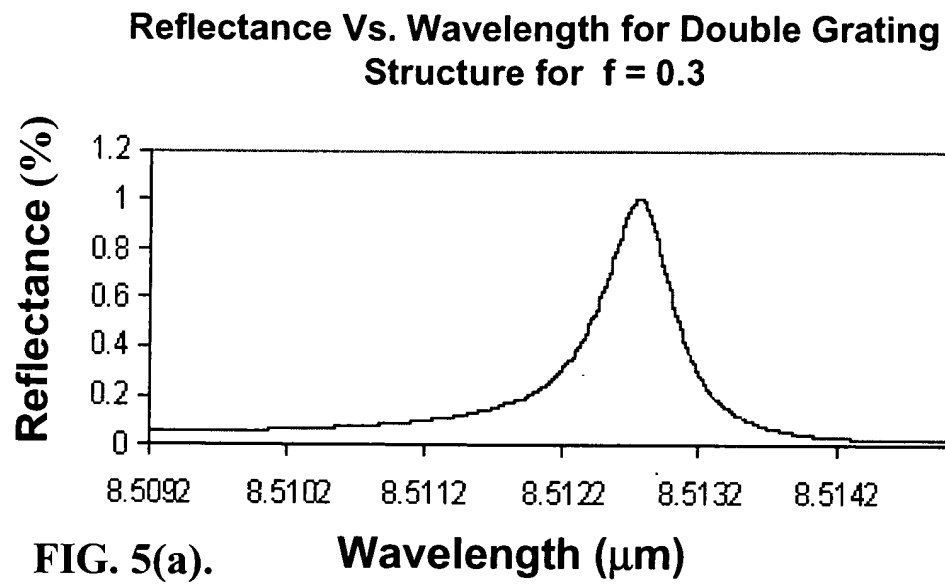
**FIG. 3.**

Table: Materials average refractive index for 3 – 12 μ m

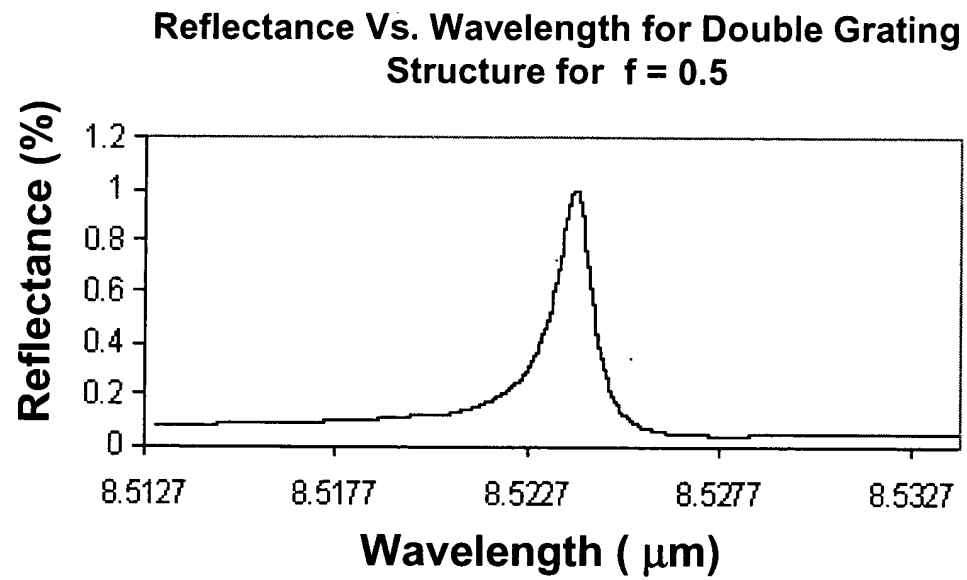
Materials	Notation	Refractive index
Barium Fluoride (BaF) (Substrate)	n_S	1.47
Zinc Sulphide (ZnS) (Uniform Layer)	n_{C2} or n_2	2.22
Yittrium Oxide (Y_2O_3) (Low Index Grating Material)	n_L	1.69
Diamond (High Index Grating Material)	n_H	2.37
Air (Superstate)	n_{C1}	1.0

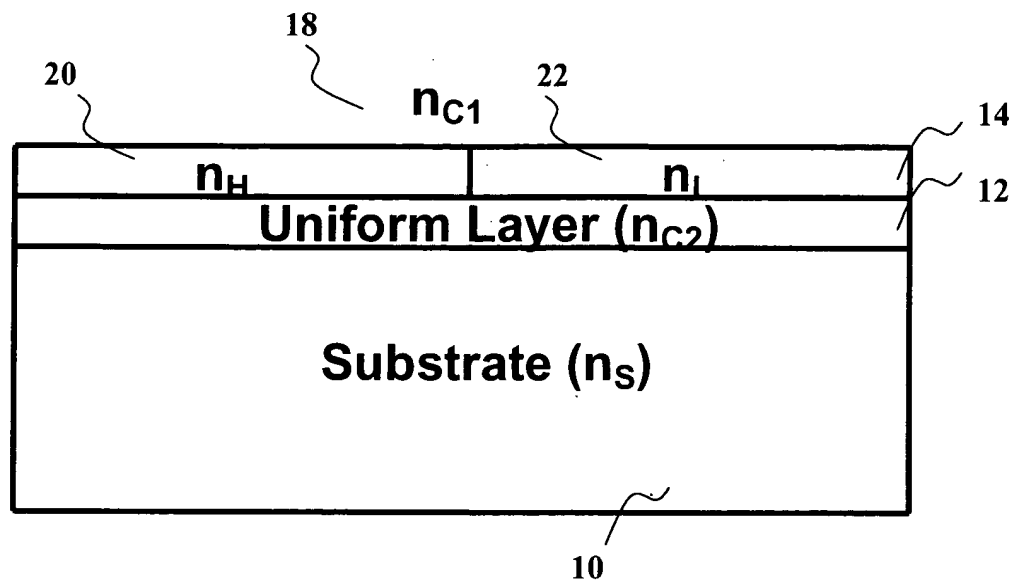
FIG. 4.

8/17/2006



8/17/2006

**FIG. 5(b).**

**FIG. 6.**

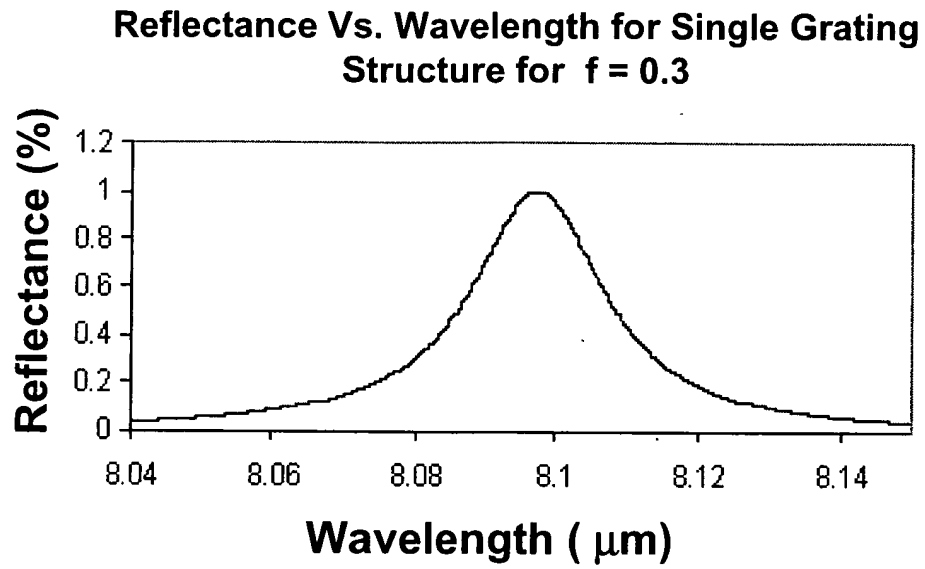


Fig. 7(a).

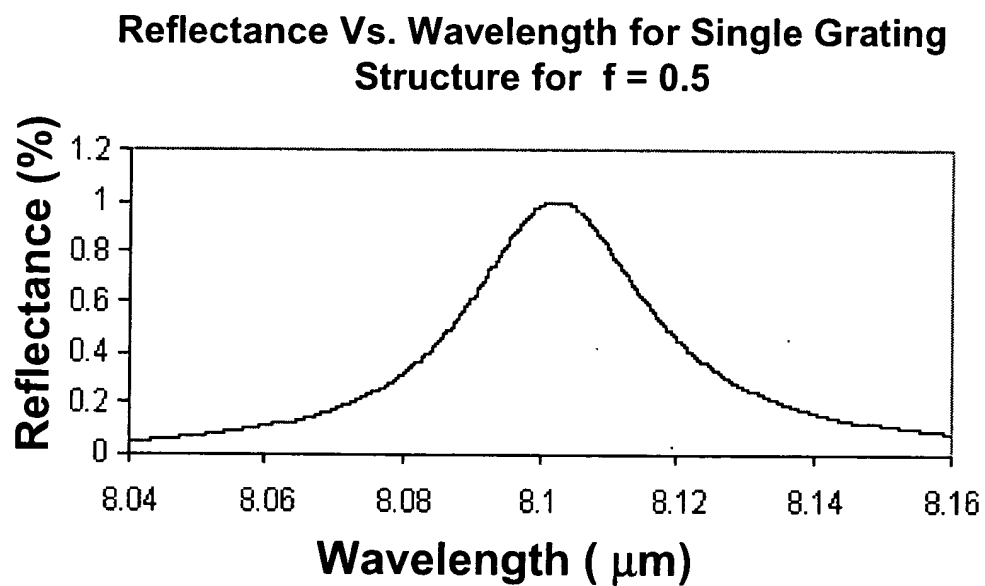


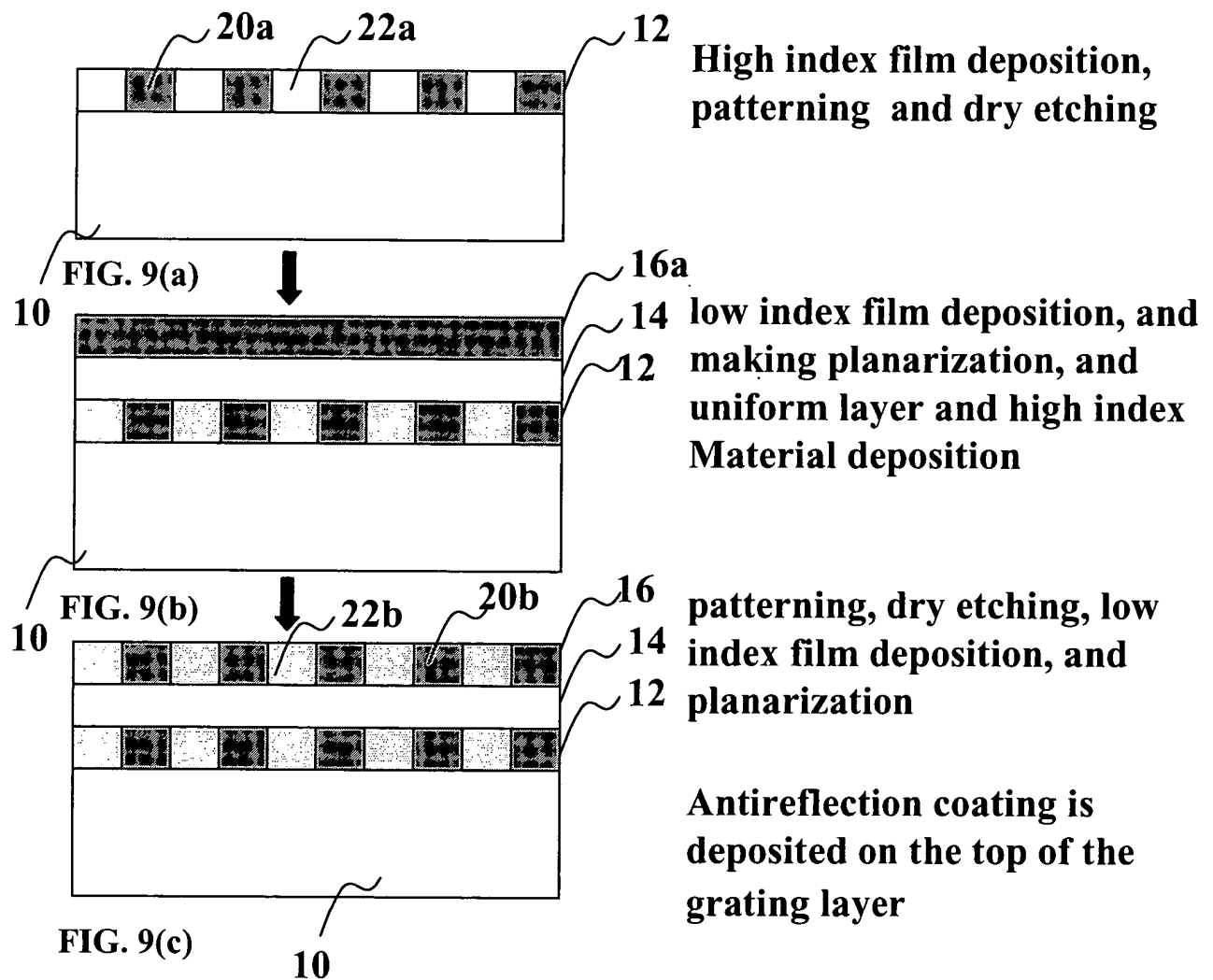
Fig. 7(b).

8/17/2006

Table: Performance comparison between proposed and conventional filters

Estimated Performance	Fill Factor 0.5		Fill Factor 0.3		Conventional $\lambda/4$ Stacks
	Single Grating	Double Grating	Single Grating	Double Grating	
Peak Wavelength (μ m)	8.102	8.523	8.097	8.512	8
Peak Transmission (%)	>99.9	>99.99	>99.99	>99.99	>99.99
Bandwidth (nm)	31.45	1.211	22.23	0.638	453
Leakage (%)	<2	<3	<2	<3	40
Grating Spacing (μm)	4.6	4.7	4.6	4.7	-
Thickness (μm)	1.981	3.0613	2.0191	3.1373	100

FIG. 8.

**FIG. 9.**

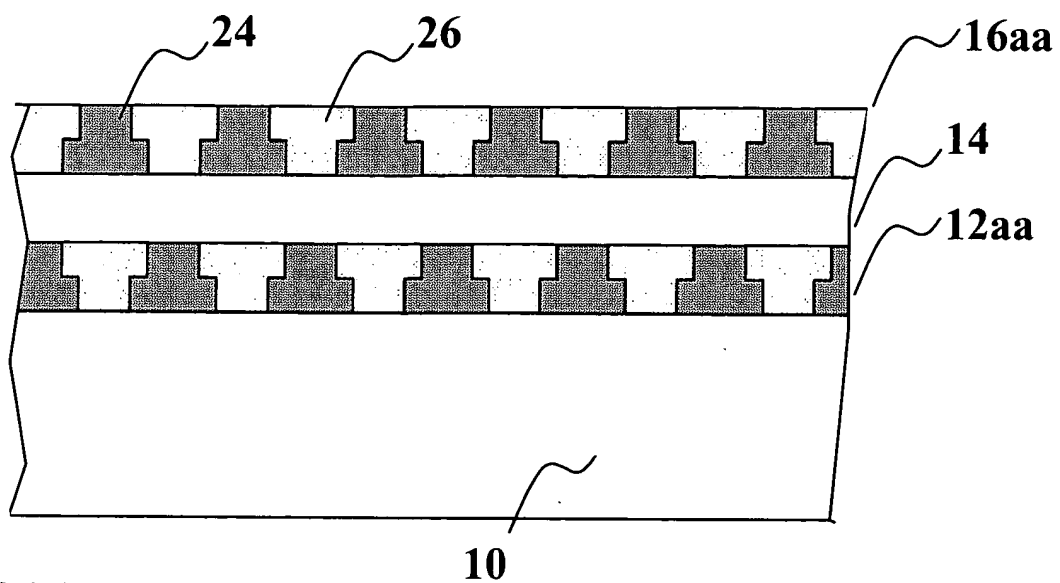


FIG. 10(a)

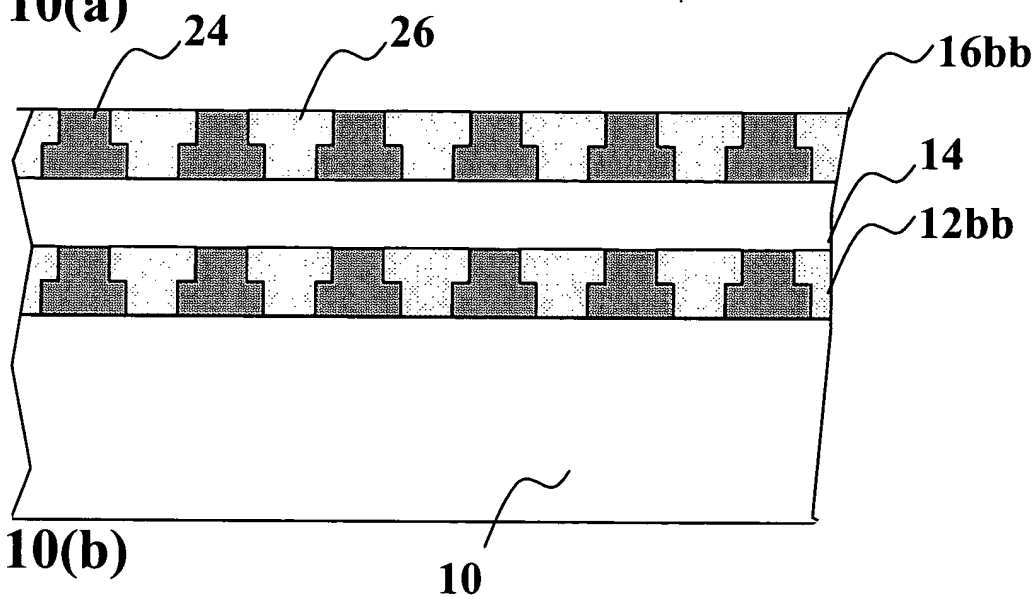


FIG. 10(b)

FIG. 10.

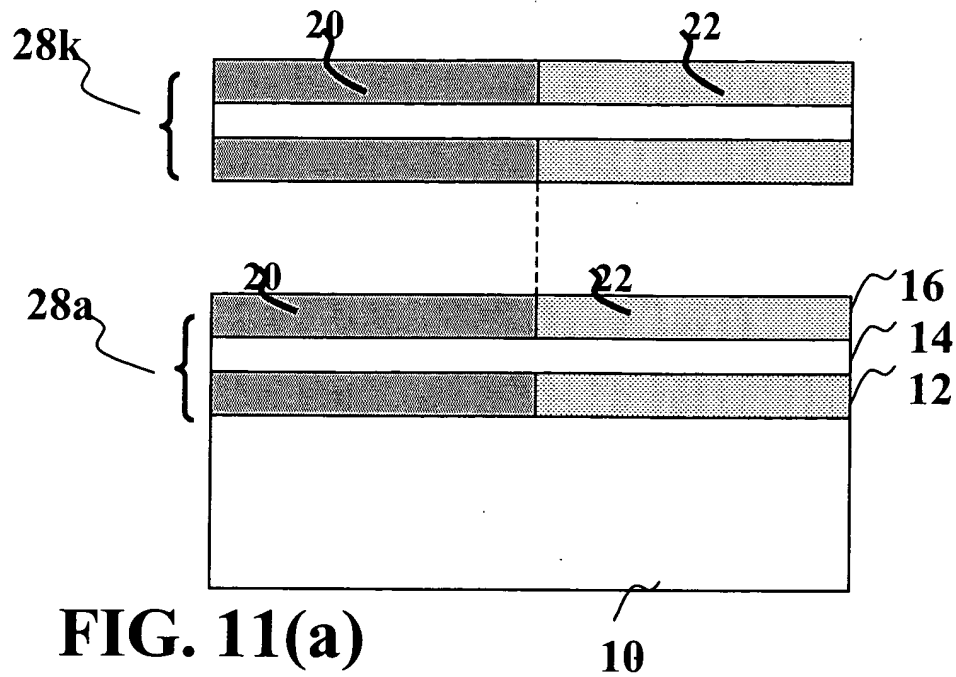


FIG. 11(a)

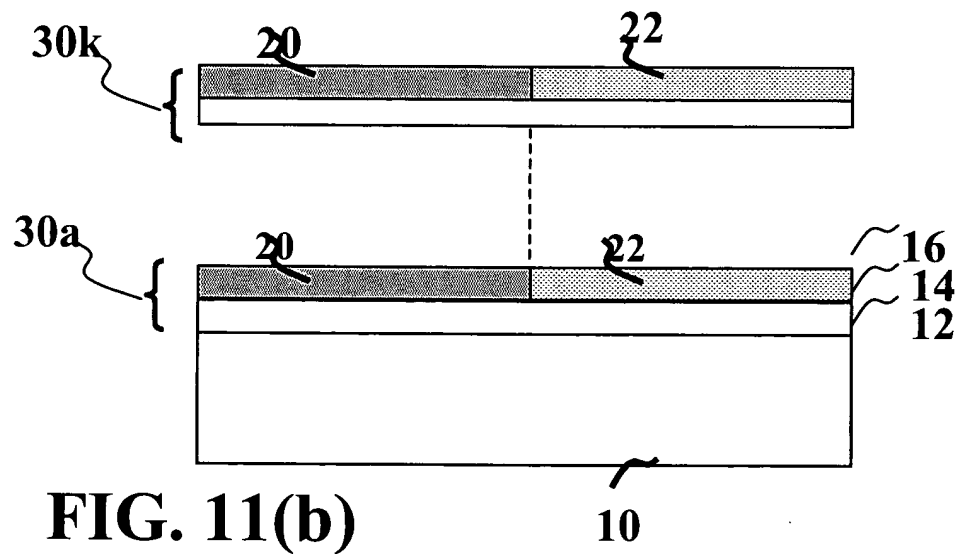


FIG. 11(b)

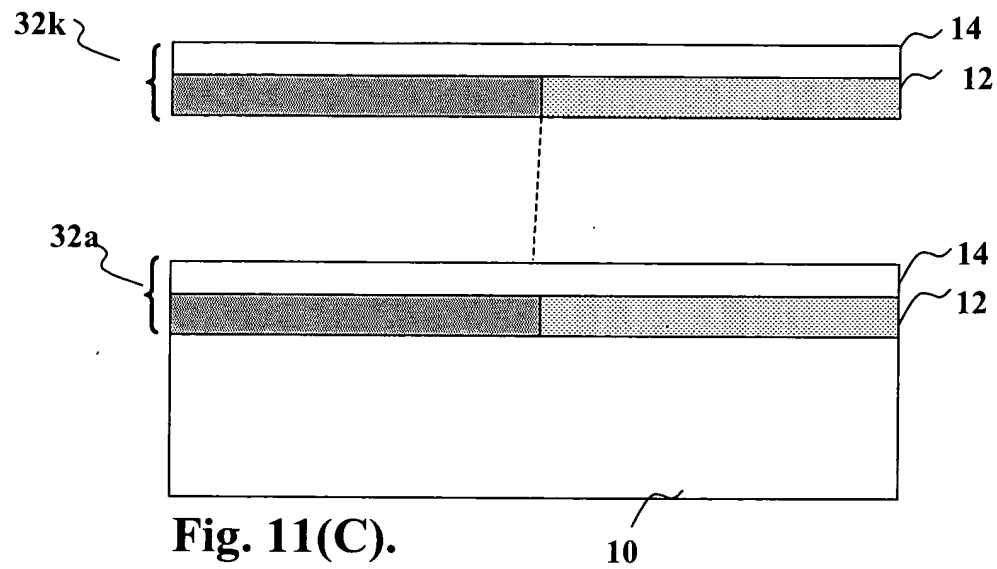
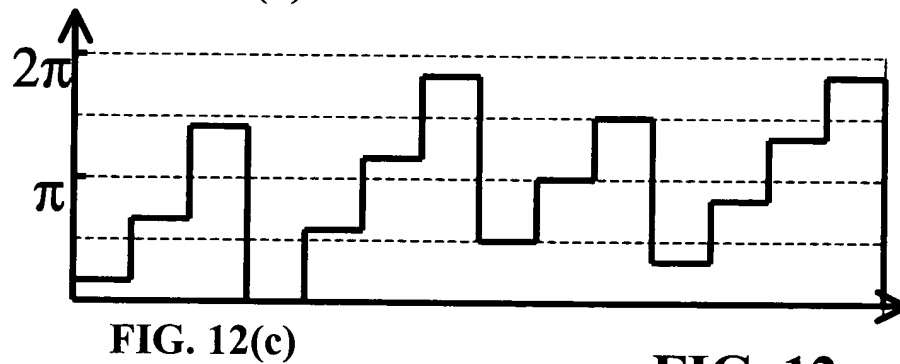
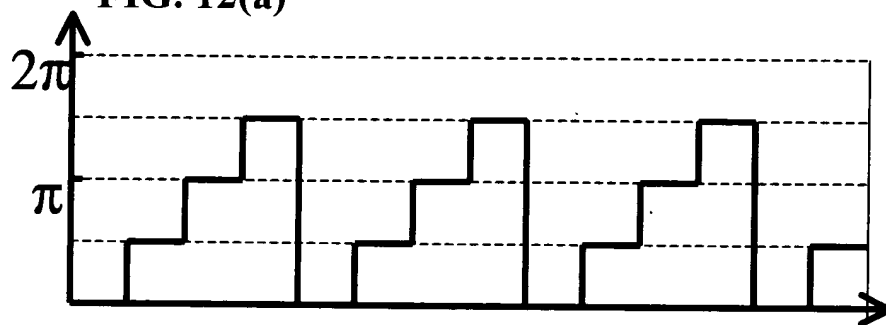


Fig. 11(C).

FIG. 11.

**FIG. 12.**